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ON THE USE OF ZERO AND TWENTY IN THE MAYA TIME SYSTEM

By GEORGE BYRON GORDON

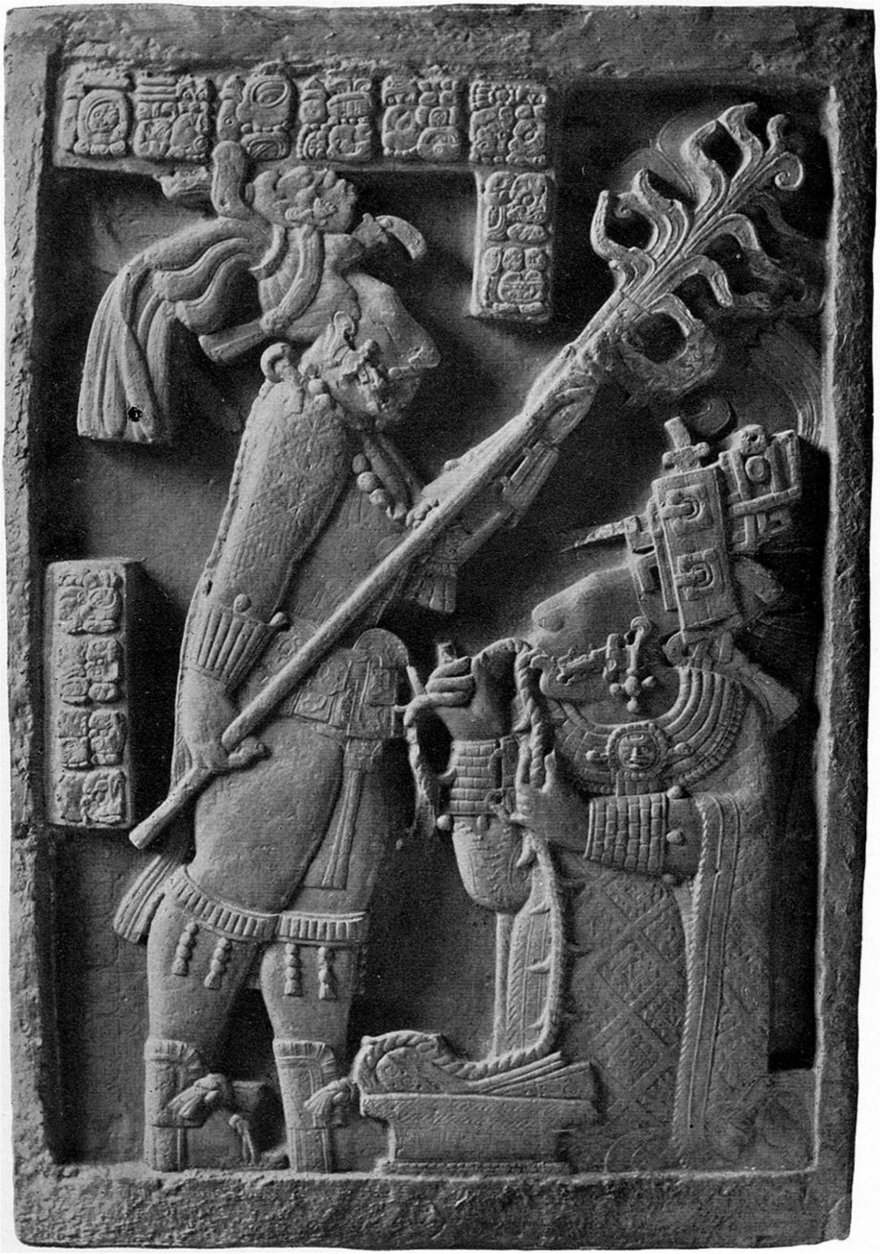
The familiar method employed by the Maya scribes in writing the numbers from 1 to 19 inclusive, consists, as has long been known, in the adoption of a normal set of numeral symbols composed of lines and dots. It has also been demonstrated that the same people employed certain face symbols to represent the same numbers. The precise idea underlying this invention is not known. It appears that the face representing any number below 10 could be transformed into a symbol for the sum of that number and 10 by giving it a skeleton jaw. At the same time it appears that some of the numbers above 10 had also distinct faces to represent them individually. The special feature of the face representing 10 was the fleshless appearance of the bones, giving it the aspect of a death's-head.

Thus, while two distinct sets of numerals have been made out for the numbers from 1 to 19 inclusive, or at least two distinct methods of indicating these numbers, the means used to convey the idea of other numbers have never been satisfactorily determined.

The importance of the part played by 20 in the Maya numeral and calendar systems gives reason for expecting to find some symbol for that number playing a conspicuous part in the inscriptions. It is also evident that, in the same connection, the scribes were constantly coming in contact with *zero*, which consequently played an important part and must have had its appropriate symbol. Certain characters used by the Mayas, and occurring frequently in the inscriptions and manuscripts, have been explained as symbols for 20, and others have been variously interpreted as 0 and as 20. Dr Seler published, two years ago, a list of characters occurring in the codices, which he regarded as signs for 0, and another list of characters from the inscriptions, which he believed to stand for the same number. He also gave two groups of characters, one from the manuscripts and one from the inscriptions, which he regarded as symbols for 20. Each member of this last group from the inscriptions is a sign used to accompany the month symbol, apparently to indicate the position in the month of the given day, when that day is not one of the days numbered from 1 to 19.

Bowditch has shown that in three cases out of four from the Dresden Codex, and in three cases out of four from the inscriptions, after the nineteenth day is passed, according to the reading of the text, the next succeeding month would seem to be reached, this being the inference naturally to be drawn from the month symbol in each case. The character attending the month symbol in each of these cases would consequently seem to represent the numerical designation of the beginning day, and since it is not 1, Bowditch has expressed the opinion that the weight of evidence is in favor of the hypothesis that the beginning day of the month was numbered 0 and that the symbol in consequence stands for that number.

Seler, in an article written at a later date than the one cited, in which he gives a group of symbols for 20, has pointed out that in the exceptional case from the inscriptions, where, after the nineteenth day is passed, the month given is that in which the nineteen days have been counted, the date in question is connected with the next succeeding date as well as with the preceding date by numbers written after it and before it. This, as the text stands, could be true only if the days of the month were numbered in order from 1 to 20. Seler consequently cites this example as proof that the symbol with the month sign means 20. He explains the symbol used in the



LINTEL FROM MENCHÉ. (PHOTOGRAPH OF A CAST IN PEABODY MUSEUM.)

other class of cases, in which, after the nineteenth day is passed, the following month is introduced by translating that symbol as *eve* (Vorabend). Both symbols were used, according to this theory, to designate the last day of the month; but while one means 20, the other means *eve*. That is to say, the Mayas variously designated the last day of a month as the twentieth of that month or as the *eve* of the following month. Thus the last

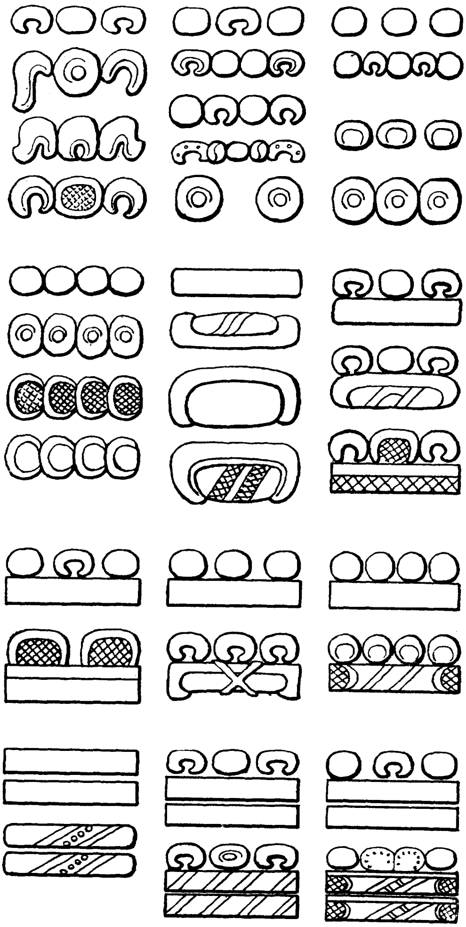


FIG. 12—The normal numeral symbols from 1 to 12; illustrating some of the variations.

day of Mol, for instance, might be written as the twentieth day of Mol or as the *eve* of Chen, each designation having its appropriate symbol. Seler thus divides the group, to each member of which he had already assigned the value 20 into two divisions, one consisting of several examples of the character meaning *eve*, and the other consisting of his symbol for 20, of which but a single example occurs in a position where the context shows what day is meant. It is true that this symbol differs from those used in connection with the other class of cases in all known examples, but the corresponding symbol in the Dresden Codex, in the single example cited by Bowditch, does not differ from the symbol used in the three examples of the other class from the same source.

The outcome of these different investigations would seem to be that, while the Mayas often referred to the last day of a month in terms of the next succeeding month, and sometimes in terms of the month in which the day belonged, it may well be doubted whether the symbol used in either case meant either 0 or 20. It does not seem safe at present to say what the exact English equivalent would be for the one or the other mode of expression.

There is but one symbol for 20 concerning which all seem to be agreed,— it is found in the manuscripts, and I am not aware that it has any counterpart in the inscriptions. (Fig. 13, *a*.)

In regard to 0, it is perfectly evident that in certain positions certain symbols were treated as equivalent to this number, whatever meaning the same symbols may have had apart from these positions. These are the symbols used in connection with the periods of the long count to indicate that a full round of the period in question has been counted and that no periods of that particular order are to be added to the reckoning.

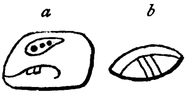


FIG. 13—*a*, Symbol for 20 in Dresden Codex. *b*, Symbol for 0 in Dresden Codex.

Goodman, while insisting that these symbols really mean 20, is explicit in his statement that they are to be treated as 0 — which indeed is proved by his entire system, and his contention that they did not represent 0, but 20, to the native scribe, is somewhat lacking in force. It is well known, moreover, that the symbols in question were applied to the Uinal in precisely the same way as to the Kin, the Tun, and the Katun. It is also well known and admitted by Goodman that the number 20 was not associated with the Uinal term in the system employed in all the manuscripts and inscriptions known. It also appears from the tablets of Tikal, to be mentioned later, that at least one of the same signs was used in connection with the Cycle, where, according to Goodman's method, the full count was 13, and where, in consequence, 20 could have no place.

Since the figures of all connected time series give the number of periods that have actually elapsed, it would be natural to this system that, when the full count of any given period required to make up one of the next higher period had elapsed, the number representing that full count should be written with the term for the given period. At the same time it required that the one period of higher order should be counted in terms of that period. Thus, when twenty Kins had elapsed, the number 20 would be written in the Kin place and the number 1 would be written in the Uinal place; when eighteen Uinals had elapsed, the number 18 would be written in the Uinal place and the number 1 in the Tun place; when twenty Tuns were complete, the number 20 would be written in the Tun place, and the number 1 in the Katun place, and so on up to the period of highest order. Such a method, though a perfectly logical and natural development of a numeral system which did not contemplate the arithmetical cipher, had serious disadvantages which could not escape the notice of the Maya scholars, nor could they fail to be aware that they were constantly treating the numerals 20 and 18 as though they meant nothing. This would happen most frequently in the case of 20, and in this way, in the course of time, certain symbols for that number may have become transformed into symbols for 0, the meaning being completely changed while the form underwent little or no transformation.

The fact that the forms of symbols which we find doing duty for 0 suggest the number 20 would thus be explained on the ground that they were originally symbols for 20 which were ultimately set apart to serve in another capacity, just as words change their meaning,— a very natural process and a very familiar one. Not until the symbol had acquired the 0 meaning would it be applied to the Uinal term or to the Cycle.

In the codices the symbol used in connection with the time series in the capacity of 0 is the form shown in fig. 13, *b*, supposed to be derived from a shell. I see no necessity for supposing that this symbol ever had any other meaning. It is not used in the inscriptions in connection with time series. In place of it there are two forms of symbol in common use. One is the quadruple symbol (fig. 14); the other has for its distinguishing and most remarkable feature a human hand. Maudslay has already compared the first with the form of a calendar found in the Féjérvary codex and approximated by another in the Cortesianus. Since this plan of arranging the days on a figure of this sort, where the twenty days of the month and the two hundred and sixty days of the Tonalamatl (or period of 13 x 20) are divided into four equal groups corresponding to the four divisions of the figure, was in vogue in a region corresponding in part, or at least contiguous, to the region where a figure quite identical was used as a numeral symbol, it might be argued that the figure of the calendar, by reason of its association with the twenty days of the month, came to be adopted as a symbol for that number. But the reverse might be argued with equal justice, namely, that a symbol for 20 was adopted, occasionally at least, perhaps to suit the fancy of some artist, as a convenient form on which to arrange the days in their order. In other words, it was simply selected as a picturesque form for a calendar.

This use of a character representing 20 might be regarded as symbolic of the way in which the calendar system itself was a development of the vigesimal system of numeration.

It might also be argued that since the figure was used in arranging a complete calendar of two hundred and sixty days, the symbol might have been adopted to represent not 20 but a *complete period* of any denomination. This would explain its use in connection with the time series, but if this were the correct explanation of its use, it is hard to see how another symbol, having a different form and derivation, could be substituted for it at will,—and how both should have been used even in the same series, as often happens.

On the whole, the most plausible theory would seem to be that the figure was originally a symbol for 20, and in its use in the construction of a pictorial calendar was quite arbitrary except in so far as the figure naturally lent itself for the purpose.

The technical composition of the figure as a 20-symbol might be explained as a combination of 5 and 4. Either, first, of five units, one at the center and one at each of the four quarters, multiplied by 4 represented by the four divisions; or, second, of four symbols for 5. By comparing the elements of the symbol as illustrated by the different examples in fig. 14 with some of the examples of the numeral 1 shown in fig. 12, the similarity is perfectly apparent. It is also clear that the four elements disposed at the four quarters around the central piece also bear a very close resemblance to some of the more elaborate and fanciful examples of the bar, the normal symbol for 5. Since 20 was made up, in the Maya system of numeration, of four

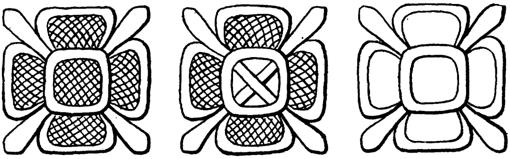


FIG. 14—The quadruple symbol for zero.

fives, a symbol composed in such a manner would be very appropriate.

The quadruple symbol never stands by itself in an inscription, but sometimes forms a glyph in combination with another numeral, but the only numerals with which it is thus combined are 5, 10, or 15 (fig. 15).

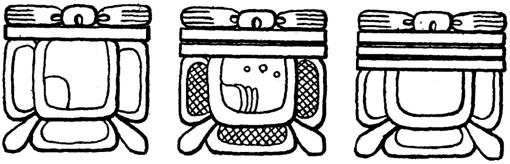


FIG. 15—The quadruple symbol in combination with the numerals 5, 10, and 15.

Coming, now, to the other symbol commonly used in the same connection as that one just described, we find that the typical form is a face with a hand stretched across the lower jaw (fig. 16, *b*). Another form which it often takes is a hand supporting an object resembling an abbreviated spiral surrounded by a border, and not unlike a certain form of eye found frequently as a feature of the sculptured figures (fig. 16, *c*).

I have already offered the suggestion that both the quadruple symbol and the two forms in which the hand appears originally stood for 20, and that they afterward became signs for 0. My reasons for this view in regard to the first have already been stated. The considerations that have led me to the same conclusion in regard to the others will appear presently.

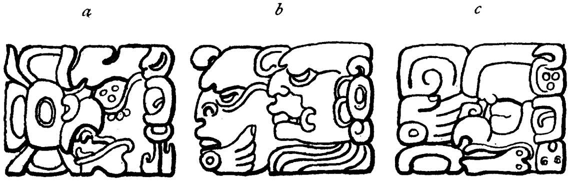
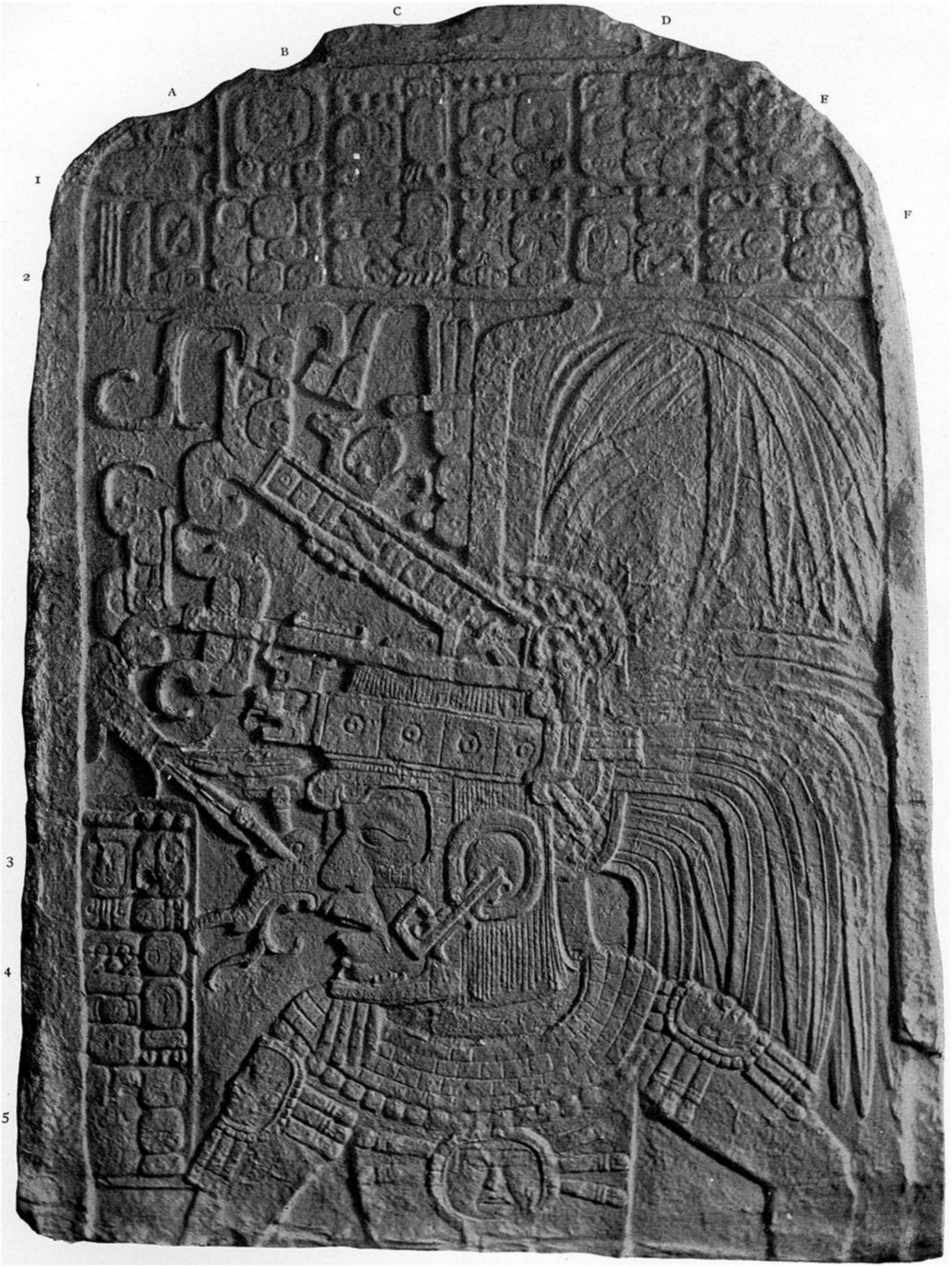


FIG. 16—The three symbols for zero; *a*, 0 Tuns; *b*, 0 Kins; *c*, 0 Tuns.

I come now to the enunciation of the proposition with which it is the chief purpose of this article to deal, namely, that a certain form of hand stands in the inscriptions as a symbol for 20. What



UPPER PORTION OF A STELA AT SASTANQUIQUI. (PHOTOGRAPH OF A CAST IN PEABODY MUSEUM.)

follows, while it does not constitute a complete mathematical demonstration of this proposition, is nevertheless sufficient to establish a presumption in its favor and to recommend it for further consideration.

The principles on which this proposition is based are, briefly stated, as follows:

First. The face symbol for the Cycle is distinguished from that for the Katun by a hand upon the lower jaw. As the Cycle is equal to 20 Katuns, the hand in this case would seem to be equivalent to 20.[1] This is capable of the construction that whereas the skeletonizing of a jaw implies the addition of 10, the placing of a hand in the same relation to a face character implies multiplication by 20.

Second. The face numeral used in time series to represent a full count resembles very closely the face sign for 1, except that the ear-peg extending across the cheek is replaced by a hand like that on the Cycle sign. Now, it is perfectly clear that in the case of the Cycle, the hand cannot mean that the value of the Katun sign is multiplied by 0 or in any way brought into relation with that number, hence if there is any uniformity in the system, as we have good reason to expect, the hand in the full-count sign must have signified originally at least the number 20. A good illustration of this principle is afforded by the initial series of the Tablet of the Foliated Cross, where A 3 and A 8 seem to be quite identical with A 7, except that in the latter the ear-peg is replaced by a hand on the lower jaw. (The mark I L on the cheek in these examples is not a constant feature of the 1 face.) Without the hand, I am inclined to think that the frontal ornament and the lock of hair would identify the face as a symbol for 1.

Third. This principle involves the question of the initial day of the 52-year period. That the Dominicals, or year-bearers, in the calendar used by the writers of the inscriptions and of the Dresden Codex were Akbal, Lamat, Ben, and Ezenab has been generally recognized, and indeed it becomes perfectly evident from the inscriptions themselves. The fact that Goodman puts Ik, Manik, Eb, and Caban at the head of the years in his tables, is simply the result of his system of numbering, in which the first day is not counted until the second is begun. This transposition of the Dominicals has no effect whatever on the result, at least so far as the present argument is concerned. The important question which remains undecided in this connection is: Which of the year-bearers stood at the beginning of the first year? Nothing whatever has been put forward to show that one of these days has any more right to the position than another. If we place Lamat at the head of the calendar, then the twentieth day will be Manik, and if we count the days by twenties through the whole period of 52 years, the twentieth place will always be occupied by Manik. Now, the symbol for Manik, both in the codices and in the inscriptions, is a hand similar to that which we have examined in connection with the two face symbols.

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[1] Bowditch has already stated this principle.

Before proceeding to test the conclusions to which the principles stated would seem to lead, it will be necessary to say a few words concerning the numbering of time periods in the texts.

In an article in the last number of this journal I had occasion to cite several illustrations tending to show that while the numbers attached to the periods in connected series intended to express the exact distance between two dates or fixed points in time are meant to be used in their cardinal sense, and indicate the number of periods that have actually expired, yet a number used in connection with a period but not intended to express the distance between two dates or a definite length of time refers to the ordinal numeration of the periods, calling the beginning member of the series the first.

To illustrate this ordinal numeration, plate XV is introduced. The photograph is of a plaster cast in the Peabody Museum and represents a lintel from Menché. The inscription at the top begins with the date 5 Eb 15 Mac, and in the fifth glyph to the right is seen the Katun sign with the number 4. Nearly all the initial dates at Menché give nine Cycles, indicating that the dates are in what we would call the tenth Cycle, and the date on this lintel is found to be in what we would call the fourth Katun of the same Cycle, and the Maya plan of numeration would therefore seem to have been the same as ours.

Turning now to Stela D of Quirigua, we find on the east side the date 7 Ahau 18 Pop following the initial series; then after five unknown glyphs comes the date 8 Ahau 3 Pop, without any series of the usual order to connect it with the initial date (fig. 17). How is this last date to be brought into relation with the long count? Is it by some unknown method of reckoning in the preceding glyphs? This may well be doubted unless it can be shown that the inscriptions contain nothing but reckonings backward and forward according to different methods. A date indicated simply by the day and month, with their respective numerals, is not a fixed point in time, but any one of an indefinite series of points occurring at intervals of 52 years. How then is the particular day 8 Ahau 3 Pop referred to in this inscription determined?

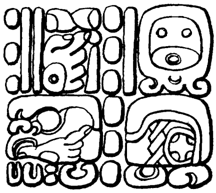

FIG. 17—Stela D, Quirigua, east side.

The glyph immediately preceding the date is composed of a head very much like the Cycle symbol, together with the number 13 and a hand. Is this a declaration that the date is in the twentieth Katun of the thirteenth Cycle of some Great Cycle? As no reckonings have been found at Quirigua, bringing the count down so late as the end of the fifty-fourth Great Cycle, and since the initial date of the most important inscription at Palenque goes back to the last Katun of the fifty-third Great Cycle,[1] this position is the more likely. The trial confirms this conjecture, for the date is not found in the last Katun of the last Cycle of the fifty-fourth Great Cycle of Goodman, but it is found in that position in the fifty-third Great Cycle, as follows:

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[1] This is according to Goodman's interpretation of the initial series of the Tablet of the Cross.

53. 12. 19. 3. 15. 0. 8 Ahau 3 Pop.

At the end of the inscription the reckoning is brought back to the initial date.

One example of this sort is, of course, of very little value. It is only the combined evidence of a great many examples, all conforming to the same rule, that can be relied upon. A sufficient number of such examples could not fail to prove convincing.

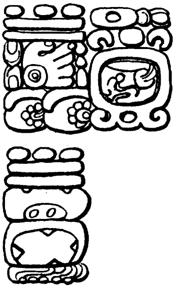

FIG. 18—Stela F, Quirigua, east side, B 16 A 17.

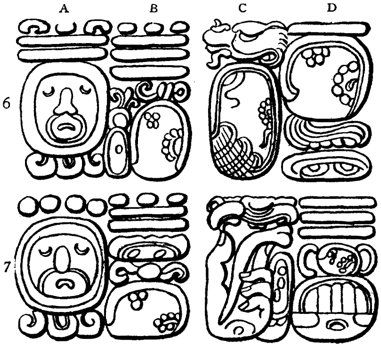

FIG. 19—Part of an inscription on Stela 4, Copan.

The next example is from the east side of Stela F of Quirigua, B 16 A 17 (fig. 18). Here we have the date 1 Ahau 13 Yaxkin without any connecting series. Preceding this date is the same gylph which we found before the date on Stela D, except that here the Cycle symbol is the ordinary character instead of the head. As precisely the same remarks will apply to this date as to the first example, I will simply record the fact that it stands as follows:

53. 12. 19. 10. 5. 0. 1 Ahau 13 Yaxkin,

thus affording additional testimony in support of our proposition.

The next example is found on Stela 4 of Copan[1] (fig. 19). Here the initial series with the day and month date, though partly obliterated, would seem to be 54. 9. 8. 15. 0. 0. 10 Ahau 8 Tzec. The three glyphs following are partly destroyed. It is just possible that these glyphs may have contained a series connecting the initial date with the next date which follows in A B 6, but there is no indication of such a series, and the probability is that none existed. Following this second date, in C D 6 is a pair of symbols the meaning of which is not clear, but since the number 5 appears in connection with one of them, and since the glyph immediately following is the date 4 Ahau 13 Yax (just five Tuns from the preceding date), it is not unlikely that this distance is declared in the intervening glyph. Following the date 4 Ahau 13 Yax is the Katun sign, surmounted by the number 15 and preceded by a hand. Above the hand is a symbol which Goodman declares to be a sign for *beginning*. He does not make clear his reasons for this interpretation, however, and, so far as its meaning is indicated by its position, I do not see why the character might not just as well mean *ended*. According to our interpretation of the two examples cited, the Cycle symbol is accompanied by its own number and also the number of the Katun; that is to say, by its own number and the number of the next period of lower order. In the present example we would have the Katun sign accompanied by its own number and that of the next period of lower order, i. e., the Tun. If, then, the glyph C D 7 means that the twentieth Tun of the fifteenth Katun is ended, the series indicated would be

54. 9. 15. 0. 0. 0.

We find that the date corresponding to this series is 4 Ahau 13 Yax, the date given in A B 7.

The hand in this third example holds a little rod: otherwise it is very similar to the hand in the first two examples. Whether the innovation modifies the meaning in any way or is simply an artistic addition, it is impossible to say. We shall come across the same thing again, and it would appear that, so far as the numerical value is concerned, the symbol is not affected by the introduction of this detail.

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[1] I am indebted to Mr Maudslay for a lithographic reproduction of the drawing by Miss Annie Hunter for the forthcoming addition to his already elaborate work on Copan.

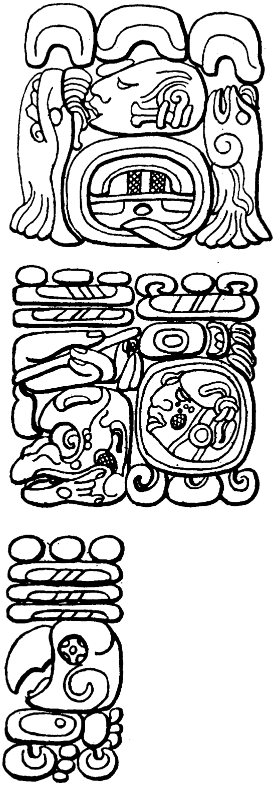


FIG. 20—Beginning of the inscription on the south side of Stela C, Copan.

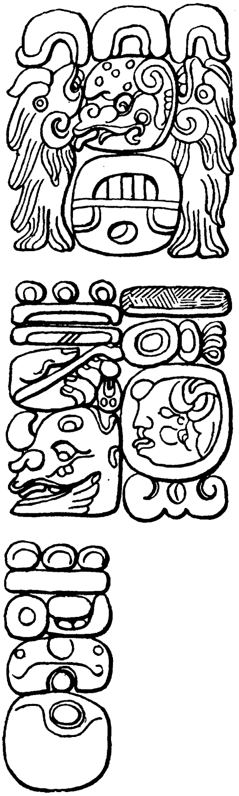
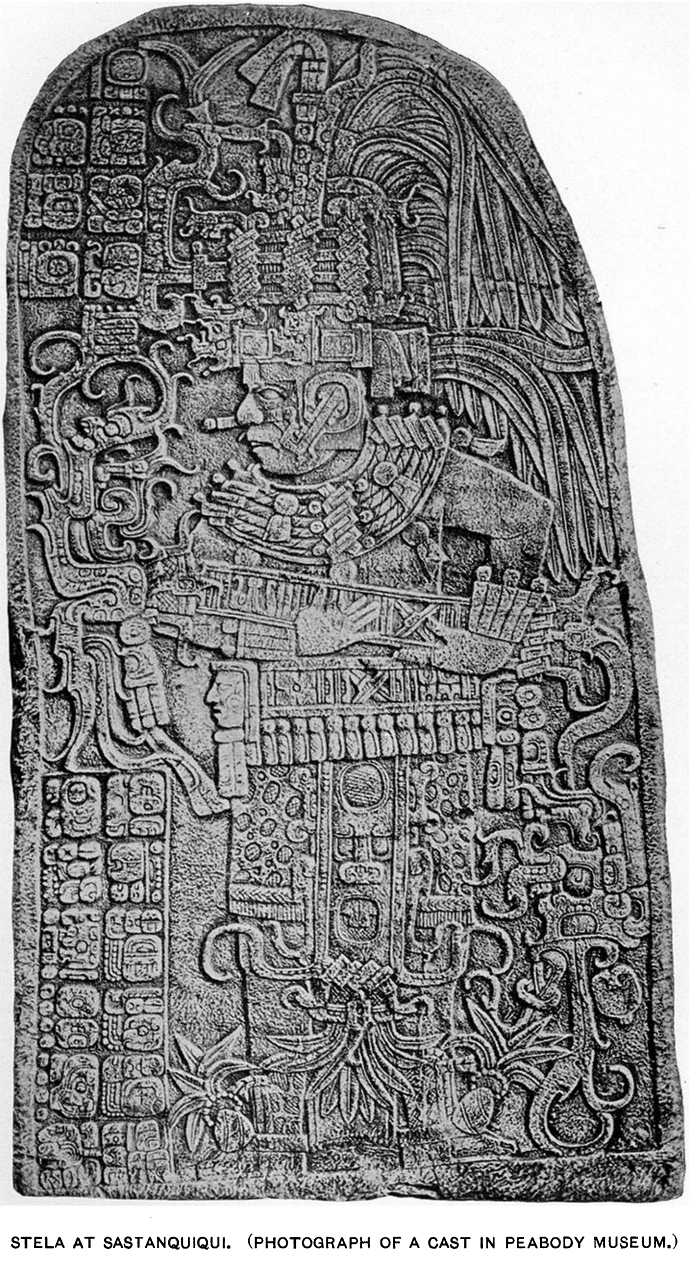


FIG. 21—Beginning of the inscription on the north side of Stela C, Copan.

The fourth example is from Stela C of Copan. On the south side of this monument there is an inscription, beginning in the usual way with the large glyph always found at the head of the initial series and called by Goodman the Great Cycle glyph (fig. 20). The inscription is very unusual, however, in that, instead of being



STELA AT SASTANQUIQUI. (PHOTOGRAPH OF A CAST IN PEABODY MUSEUM.)

followed by the initial series consisting of Cycles, Katuns, Tuns, Uinals, and Kins, the beginning or Great Cycle glyph is followed by the Cycle glyph, which is followed immediately by the date 6 Ahau 18 Kayab. How is the position of this date in relation to the long count indicated? The Cycle has the number 13 attached to it. It is also attended by a hand holding a little rod precisely like the one in the last example. If this means the twentieth Katun of the thirteenth Cycle (the Great Cycle being announced by the beginning glyph), then the date is fixed absolutely and unmistakably.

Since we are unable to determine the number of the Great Cycle from the glyph, it will have to be determined by a trial. The day 6 Ahau 18 Kayab is found in the last Katun of the last Cycle of the fifty-third Great Cycle, as follows:

53. 12. 19. 5. 14. 0. 6 Ahau 18 Kayab.

Following the initial date after a brief interval comes the long series: 11. 14. 5. 1. 0, after which the initial date is repeated. Then comes the date 6 Ahau [1] 13 Muan. Now, if this number be added to the initial date, it will take us to the latter date.

53. 12. 19. 5. 14. 0. 6 Ahau 18 Kayab
11. 14. 5. 1. 0
54. 11. 13. 10. 15. 0. 6 Ahau 13 Muan.

The last date is just exactly 371 days, or 1 year and 6 days, later than the last date on the Hieroglyphic Stairway, and the month is the same in both cases. In the monograph on the Hieroglyphic Stairway, published by the Peabody Museum, I expressed the opinion that Stela C belonged to the same period as that structure. I had not at that time made any attempt to fix the dates in the inscription on Stela C, and that opinion was based solely on certain technical peculiarities in the sculpture on both monuments.

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[1] Maudslay's drawing shows the day number as 8, but the photograph made for the Peabody Museum, though unfortunately not very clear, seems to show the number 6.

According to Goodman the dates in this inscription and those on the opposite side of the same stela are declared to be the initial days of Tuns. His reason for this statement seems to be the presence, in connection with each day-sign and its numeral, of an element which he interprets as a declaration to this effect. I am unable to follow Goodman to this conclusion, since the sign in question is not always found with the day Ahau when that day is the beginning of a 360-day period, and, on the other hand, it does occur sometimes in connection with days which cannot occupy that position. Goodman, indeed, admits his inability to explain either of the inscriptions on this stela, and is inclined to believe that both are full of errors. It would seem, however, as if the writer was particularly explicit, since he took the trouble to repeat the initial date after the long series on the south side.

On the north side of Stela C is another inscription beginning in the same way as the one on the south side (fig. 21). First comes the beginning or Great Cycle glyph, then the Cycle, attended in the same way as before by the number 13 and a hand holding a little rod; then follows the date. The day number is unfortunately not very clear, as the stone at this point is injured. Maudslay's drawing, which shows the number 15, is of course in error, and the stone shows that the number is almost certainly 5. The month glyph is 8 Cumhu. When the monograph on the Hieroglyphic Stairway was written I was inclined to believe that the month number in this date was 18, but since then I have found reason to change this opinion, and the character which appears between the month and its numeral in the present example, and which also appears twice in Date I of the Hieroglyphic Stairway, once between the Uinal and its numeral, and again between the month sign and its numeral, has no numerical value. Date I is in reality 54. 9. 5. 19. 3. 0. 8 Ahau 3 Zotz.

If the initial date on the north side of Stela C is 5 Ahau 8 Cumhu, as it almost certainly is, it is found in the twentieth Katun of the thirteenth Cycle of the fifty-third Great Cycle, and thus agrees with the other examples.

53. 12. 19. 7. 15. 0. 5 Ahau 8 Cumhu.

It is noteworthy that the two dates at Quirigua and the two initial dates on Stela C of Copan are in the same Katun as the initial date of the Tablet of the Cross as interpreted by Goodman.

In the Temple of the Inscriptions at Palenque, East Panel, P 2 to P 6, the date 3 Ahau 3 Mac is declared to be the day when 9 Cycles and 9 Katuns were ended, which is equivalent to saying that it was the beginning day of the tenth Katun. On the West Panel the same date is repeated E F 8. Following it is the long number 2. 9. 1. 12. 1, and in E 12 is the Cycle sign with the number 7 and a hand. If the number given be counted back from the beginning of the tenth Katun of the tenth Cycle, the day reached is in the twentieth Katun of the seventh Cycle.

To these examples of the use of the hand symbol I add, with some hesitation, another, found on Stela 1 of Copan. Unfortunately the text of this inscription is in places erased. The initial date on the east side of the stela reads, as Goodman has already rendered it, 54. 9. 12. 3. 14. 0. 5 Ahau 8 Uo. It is true that the month sign which occupied the position A 7 is entirely effaced, but Goodman is perfectly justified in calling it 8 Uo. From here to the bottom of the double column nothing is at present intelligible. Passing to the south side of the stela we find a column of glyphs, beginning apparently as follows: *10 Ahau, thirteenth Cycle . . . . the twentieth Tun of the 6th Katun.*[1] Now, reckoning 13 Cycles to the Great Cycle, the twentieth Tun of the sixth Katun of the thirteenth Cycle would always begin with 10 Ahau, the month date being different in every case. Thus 53. 12. 5. 19. 0. 0 is 10 Ahau 13 Muan, and 54. 12. 5. 19. 0. 0 is 10 Ahau 8 Zac.

Farther down the column appears a distance number beginning with the Kin sign, accompanied in a manner that is very curious and unique in my experience. The symbol attending tehKin sign is composed of a sort of disk on which the number 8 is engraved,[1] and over this another character on which appears the number 3. This symbol recalls the initial date on Stela K of Quirigua, where, as in the present case, the month date is wanting, and in its place is a head surmounted by a character very similar to this. Following the Kin sign with its strange companion is another glyph indicating 10 Uinals. Following this is the day 10 Lamat. If we count forward 10 Uinals and 8 Kins from any day 10 Ahau, it will in the natural order of things bring us to a day 10 Lamat. Is it possible that the month date is in some way indicated by the strange character with the Kin sign? If by the thirteenth Cycle at the head of the column is meant the last Cycle of the Great Cycle announced so conspicuously at the beginning of the inscription, then the day 10 Ahau is 54. 12. 5. 19. 0. 0. 10 Ahau 8 Zac. Adding 10 Uinals and 8 Kins brings us to 10 Lamat 11 Zip. Now, Zip is the third month, and the number 3 is clearly written on the upper part of the symbol attending the Kin sign. The number on the lower part, as we have seen, is 8; 8 + 3 = 11, i. e., 11 Zip. Moreover Zac is the eleventh month, and 10 Ahau is the eighth day of the month.[2] Is this a hidden cipher in which some augury or prophetic vision is concealed, or some future event mysteriously foreshadowed?

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[1] Maudslay's drawing shows the number 8 with the Katun sign, but the cast in the Peabody Museum shows it to be clearly 6. Compare the Katun numeral in the initial series of Stela 9 of Copan.

I am aware that Goodman has interpreted the symbol which I have called the *Cycle*, as the month *Chen*. While the injury to the lower portion of the glyph makes its form somewhat uncertain, it would seem to have the marks of the Cycle symbol. I know of no example of the Chen symbol that has this double appearance, and, moreover, the form of knot used in this case is that commonly associated with the Cycle sign, and differs somewhat from that used as a superfix for Chen, although it is true that the knot is usually placed *below* the Cycle and not *above* as it is here.

The particular form of hand with which we are concerned in this connection, is the relaxed or half-open hand, sometimes holding lightly a small rod. It will be seen how well this hand agrees in form and expression with the sign for the day Manik.

We return now to the quadruple symbol for full count whose numerical value in the inscriptions, as we have seen, is represented by 0, in order to consider its value in a new connection.

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[1] At first sight the number looks like 13. The bar has a light line dividing it lengthwise and giving it somewhat the appearance of 10. Compare Stela I, Copan, north, 2.

[2] It should be noted that the number which should accompany the month sign on Stela K is also 3.

I am aware of only two examples of this symbol in connection with the Cycle. Both are on the wooden tablets from Tikal now in the Museum at Basel. The preservation of these tablets is a form of evidence that Tikal was among the latest of the Maya cities, or at least that it continued to flourish at a later period than Copan, for instance, where, though the climate is more favorable for its preservation than at Tikal, not a trace of wood has been found, and where the condition of the ruins forbids the expectation of finding traces of any material so perishable.

The Tikal tablets, of which excellent photographic reproductions have been given by Rosny in his *Compte-Rendu d'une Mission Scientifique*, with which I have been able to compare the casts in the Peabody Museum made from Charnay's molds, are three in number — one complete, the other two fragmentary.

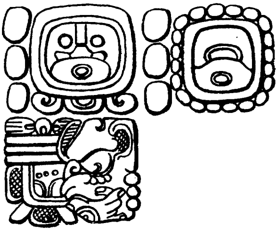


FIG. 22—Date on first wooden tablet from Tikal.

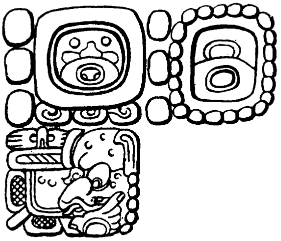


FIG. 23—Date on second wooden tablet from Tikal.

On the first is a hieroglyphic inscription consisting of sixty-four glyphs in an excellent state of preservation, distributed on either side of the great arched serpent that encloses the central portion of the tablet, twenty-eight on the left and thirty-six on the right, reading in double columns, beginning at the extreme left. The inscription begins without any initial series and starts out with the date 3 Ahau 3 Mol (fig. 22). In B3 A4 is another date, 11 Ik 15 Chen, connected with the first by the series 2. 2. 2, found in B2 A3. In D4 C5 is 12 Akbal 16 Chen, which is the day following the last date. The one day is expressed in C 4. In E F 2 is a third date, 13 Akbal 1 Chen, which is arrived at by adding 3 Tuns to the last date. This 3 Tuns is plainly indicated in F 1. After this there are no more reckonings and no more dates in the inscription.

The sum of the three series in this inscription, the entire distance reckoned forward from the initial date, is 5. 2. 3 = 1843 days. Now, it is a fact that may easily be verified by a reference to the inscriptions at Palenque, Copan, Quirigua, etc., that when the initial date is relatively remote, the reckonings that follow, either singly or in succession, invariably cover a long stretch of time and lead up to a date in much closer relation to the later initial dates. Stela C at Copan and the Tablet of the Cross at Palenque are examples in point. This situation naturally invites the construction that the initial dates in these cases went far back into the past, and that the dates which follow brought the record of events, historical, astronomical, or mythological, down to more recent times, approximating if not actually reaching the date of writing. Now, since the record of the inscription from Tikal covers a period of only a little more than five years, the inference is that the initial date itself may be taken for the date with which the tablet is historically identified. Here we are confronted with the same question as before: What is the position of this date in the long count, and how is it to be determined? No Great Cycle glyph appears at all, unless it exists in some unfamiliar form in the body of the inscription or on some other part of the tablet.

Immediately following the initial date is the Cycle symbol — the head marked with the sign of the hand. In front of this symbol stands the quadruple sign, indicating that a full round of Cycles has been counted, and implying a first Cycle. In combination with this sign is the number 15 in normal characters. Above this number is a sign the meaning of which is not known, and the exact way in which it modifies the meaning of the glyph does not appear; but it does not affect the numerical relations.

This is the first instance I have seen of the use of the quadruple symbol in connection with the Cycle, but, judging by its uniform meaning in connection with the other periods, it can have but one meaning here. If, therefore, the date is forward from 4 Ahau 8 Cumhu, the beginning of Goodman's fifty-fourth Great Cycle, as the absence of long reckonings and the condition of the tablet would seem to prove, and if Goodman is right in counting thirteen Cycles to the Great Cycle, then this date would in all probability be in his fifty-fifth Great Cycle, the one to which all other known dates in the Maya inscriptions, taken together, lead.

Does the number 15 mean the fifteenth Katun? Let us assume that the Great Cycle with which we are concerned must be either 53, 54, 55, 56, or 57. Then if the Katun is the fifteenth, we have for the beginning day of the Katun, using the notation of the initial series:

53. 0. 14. 0. 0. 0. 2 Ahau 8 Yaxkin
54. 0. 14. 0. 0. 0. 2 Ahau 3 Zip
55. 0. 14. 0. 0. 0. 2 Ahau 3 Kayab
56. 0. 14. 0. 0. 0. 2 Ahau 18 Ceh
57. 0. 14. 0. 0. 0. 2 Ahau 13 Mol.

Now, to reach 3 Ahau 3 Mol from each of these dates it is necessary to go forward as follows:

53. 0. 15. 3. 7. 0
54. 0. 16. 5. 4. 0
55. 0. 14. 11. 12. 0
56. 0. 15. 11. 3. 0
57. 0. 16. 10. 7. 0.

The only one of these that comes in a fifteenth Katun is the third, and the initial date of the tablet is as follows:

55. 0. 14. 11. 12. 0. 3 Ahau 3 Mol.

The second tablet has an inscription beginning in precisely the same way as the first, with 3 Ahau 3 Mol (fig. 23).

Farther on come three short series, each connecting the date which precedes it with that which follows, and the sum of these series, 5. 13. 0, equal to 5 years and 235 days, represents the distance of the last date from the first. In this respect, as in others, the inscription resembles very closely the one already examined. Here, again, the initial date is followed by the Cycle symbol prefixed by the quadruple sign, indicating that a full round of Cycles has been counted. Instead, however, of being combined with the number 15, it is combined with a single ornamented bar. Although I know of no other instance where the normal symbol for 5 is decorated in precisely this way, there is such a variety in the manner in which these numerals are treated that such a departure is not strange, and we may read the glyph *a fifth Katun after a full round of Cycles.* In the same way as the first date was determined we find this one to be:

55. 0. 4. 0. 14. 0. 3 Ahau 3 Mol.

The third tablet has an inscription beginning with the day and month date 9 Ahau 13 Pop (fig. 24). Here the only subsequent reckoning is less than a year. The initial date is again followed by the Cycle symbol, not in this case a head, as in the other two, but the more familiar symbol. Above the Cycle is what appears to be the number 1, and at the left is a broad ornamented bar. If this means the fifth Katun of the first Cycle, we must expect to find the date in the same Katun as that in the last example, which proves to be the case:

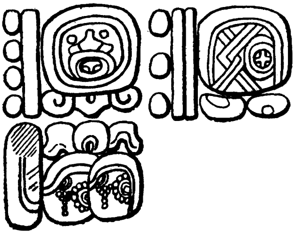


FIG. 24—Date on third wooden tablet from Tikal.

55. 0. 4. 6. 9. 0. 6 Ahau 13 Pop.

The exact reading of the glyph A 2 in the last example is, according to this, *the fifth Katun of the first Cycle,* while in the second example the reading would be *the fifth Katun after a full* *count of Cycles.* The meaning is obviously the same in the two cases.

The conclusions arrived at by the methods used in this paper are:

First, that while the three numeral symbols illustrated in fig. 16 are each equivalent to 0, there are some indications that each meant originally 20.

Second, that the Kins, Tuns, and Katuns are numbered consecutively from 1 to 20, that the Uinals are numbered from 1 to 18, and that the Cycles are numbered from 1 to 13. Also that Goodman is right in allowing 13 Cycles to the Great Cycle.

Third, that the quadruple symbol is applied to the Cycle in the same way as to the other periods.

Fourth, that the hand is a symbol for twenty.

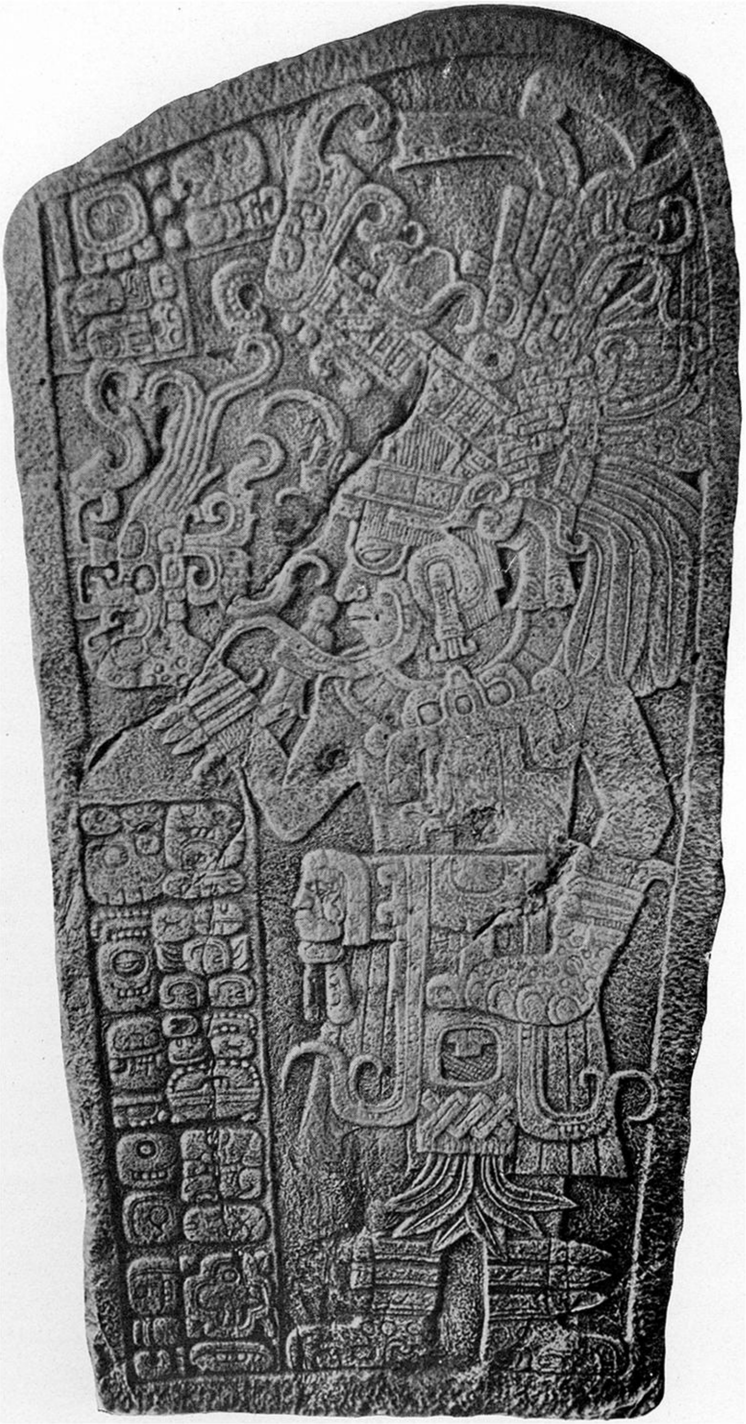
Fifth, that there is a reasonable presumption in favor of regarding Lamat as the initial day of the 52-year period, based on the form of the *Manik* symbol, which would seem to mark it as the twentieth day.

Affecting the conclusions arrived at, wherein they imply the historical character of such a date as 55. 0. 14. 11. 12. 0, are the records of the books of Chilan Balam, in which it is recorded that Ahpulha died on a day 9 Imix 18 Zip, in the year 4 Kan, 6 Tuns (or years) before the end of Katun 13 Ahau, which the books state was in the year 1536. According to the method suggested by Bowditch, the death of Ahpulha occurred in 55. 0. 2. 13. 3. 1. If we accept this and accept also the date of the first tablet of Tikal as interpreted, then Tikal was an inhabited city in 1770, more than two centuries after the death of Ahpulha, just two centuries after Palacio saw the ruins of Copan, and a century before the tablets were carried away. It should be remembered, however, that, according to Bowditch's showing, there are (granting that the record is not affected by changes in the calendar) three possible dates to choose from in a round of 18,720 years, beginning with the fifty-fourth Great Cycle, and the date selected by Bowditch is simply the one of the three that would seem to accord best with general conditions and available data. If the second date were chosen, the Tikal tablet would recede to about 2000 B.C., and Stela C of Copan to about 3000 B.C.

Although there is no known reference to Tikal prior to 1848, and therefore modern history does not prove directly that Tikal was not inhabited in 1770, the indirect historical evidence seems to preclude such a possibility. The site of the ruins is just forty miles from Flores, in the lake of San Andres, in the heart of Peten, and an equal distance from the frontier of British Honduras at the point where the boundary intersects Belize river. Cortés visited Flores in his journey to Honduras, and he heard nothing of an inhabited city in that region. The mahogany cutters of the British colony had explored Belize river and penetrated Peten long before 1770.

On the other hand, does the condition of the wooden tablets of Tikal warrant the belief in such an antiquity as 2000 B.C., and do the stelæ of Copan justify the assignment of such an antiquity as 3000 B.C.? Unfortunately we do not know the precise conditions under which the tablets were preserved, but the temple to which they pertained may have been closed for ages in such a way as to exclude moisture.

The stelæ of Copan, as we know, have been exposed to the elements as long as the city has existed as a ruin, and yet some of them still show traces of paint upon the surface. This does not seem consistent with such an antiquity as that suggested, and yet it is a curious fact that the ruins would seem to have undergone no perceptible change since 1570, when they were described by Palacio. I think that it may well be doubted by anybody who compares Palacio's description with present conditions, whether the monuments present today any visible marks of age more than they did three hundred years ago. If such be the case, they might well endure many thousand years without experiencing greater changes than their present condition reveals. It



STELA AT SASTANQUIQUI. (PHOTOGRAPH OF A CAST IN PEABODY MUSEUM.)

should be remembered, moreover, that the climatic conditions are especially favorable. Not only is frost unknown, but the temperature is very even the year round. The monuments have been protected from the direct rays of the sun as well as from the direct impact of the rains by the great forests in which they may have been buried for ages. The only changes to which they have been subjected are those connected with the growth and decay of vegetation. Thus, while the trees have protected the monuments and edifices from the elements they have contributed greatly to their destruction, for the falling trees, torn from their places by storms, or toppling from the effects of age and decay, have carried many of the monuments to the ground with them. Apart from such fortuitous destruction, sheltered from the elements by the overarching forest, and reposing in its friendly shade, the passage of a thousand years might leave but little mark upon such monuments as the stelæ of Copan.

In conclusion I will call attention to the stelæ of Sastanquiqui (Ceibal) which further illustrate the method of numbering the Katuns. On the first (plate XVI), B 1 A 2 is the date 6 Men 18 Zip. F 1 is unfortunately indistinct, but the number 1 is clearly seen at the left. Immediately following this glyph, in E 2, is 7 Ahau 18 Zip. Since this latter date is just one year of 365 days from the former, it would seem probable that the glyph in F 1 represents this period. The first half of F 2 is the Cycle sign with the number 10 and the character which, according to the method we have adopted, would seem to mean *ended.* The other half of the glyph reads *first Katun* or *1 Katun.* The position of the day in the long count is as follows:

54. 10. 0. 0. 0. 0. 7 Ahau 18 Zip.

In A 3 is the date 5 Ahau 3 Kayab. A 4 is the Katun sign with the number 1 and the sign which means *ended.* The first Katun being ended, the day should be the beginning of the second Katun, which proves to be the case:

54. 10. 1. 0. 0. 0. 5 Ahau 3 Kayab.

The inscription on this stone, so far as it at present admits of translation, is as follows: *The day 6 Men 18 Zip. . . . One year more to 7 Ahau 18 Zip. The tenth Cycle was ended and the day was the beginning of the first Katun. On the day 5 Ahau 3 Kayab, the first Katun was ended . . . .* Or it might be read: *The day 6 Men 18 Zip. . . . One year more to 7 Ahau 18 Zip when the tenth Cycle was ended. One Katun more to 5 Ahau 3 Kayab when the first Katun was ended.*

On the next stela (plate XVII) there is an inscription beginning with 5 Ahau 3 Kayab. In A 3 is the Katun sign with the number 2, and we have already seen that this date is at the beginning of the second Katun. A 4 is the Kin sign with the number 1. This passage of the inscription might, therefore, be translated as follows: *5 Ahau 3 Kayab in the second Katun, the first day.*

The inscription on another stela (plate XVIII) begins with the same date, but there is apparently nothing to show its position.

There is still another stela at Sastanquiqui with an inscription beginning with this date.

It would appear from these observations on the stelæ of Sastanquiqui that the date 5 Ahau 3 Kayab, the beginning of the second Katun of the eleventh Cycle of the fifty-fourth Great Cycle, was a very important one at that place, perhaps the date on which the city was founded. At any rate we are justified in supposing that it was a date prominently associated with the city's history, since it is a date that does not appear in the inscriptions at other places.

To facilitate study by readers who may not have access to Goodman's tables, and (since the methods adapted in this article do not conform to his Annual Calendar) to avoid confusion, an annual calendar is given in the following thirteen tables, constructed according to the plan approved in the present article.

THE ANNUAL CALENDAR

	YEARS				Pop	Uo	Zip	Zotz	Tzec	Xul	Yaxkin	Mol	Chen	Yax	Zac	Ceh	Mac	Kankin	Muan	Pax	Kayab	Cumhu	Uayeb
	1	14	27	40																			
	Days	Days	Days	Days																			
1	Lamat	Ben	Ezenab	Akbal	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10
2	Muluc	Ix	Cauac	Kan	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11
3	Oc	Men	Ahau	Chicchan	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**
4	Chuen	Cib	Imix	Cimi	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13
5	Eb	Caban	Ik	Manik	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1
6	Ben	Ezenab	Akbal	Lamat	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	
7	Ix	Cauac	Kan	Muluc	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	
8	Men	Ahau	Chicchan	Oc	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	
9	Cib	Imix	Cimi	Chuen	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	
10	Caban	Ik	Manik	Eb	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	
11	Ezenab	Akbal	Lamat	Ben	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	
12	Cauac	Kan	Muluc	Ix	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	
13	Ahau	Chicchan	Oc	Men	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	
14	Imix	Cimi	Chuen	Cib	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	
15	Ik	Manik	Eb	Caban	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	
16	Akbal	Lamat	Ben	Ezenab	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	
17	Kan	Muluc	Ix	Cauac	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	
18	Chicchan	Oc	Men	Ahau	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	
19	Cimi	Chuen	Cib	Imix	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	
20	Manik	Eb	Caban	Ik	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	

THE ANNUAL CALENDAR

	YEARS				Pop	Uo	Zip	Zotz	Tzec	Xul	Yaxkin	Mol	Chen	Yax	Zac	Ceh	Mac	Kankin	Muan	Pax	Kayab	Cumhu	Uayeb
	2	**15**	**28**	41																			
	Days	Days	Days	Days																			
1	Lamat	Ben	Ezenab	Akbal	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11
2	Muluc	Ix	Cauac	Kan	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12
3	Oc	Men	Ahau	Chicchan	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**
4	Chuen	Cib	Imix	Cimi	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1
5	Eb	Caban	Ik	Manik	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2
6	Ben	Ezenab	Akbal	Lamat	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	
7	Ix	Cauac	Kan	Muluc	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	
8	Men	Ahau	Chicchan	Oc	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	
9	Cib	Imix	Cimi	Chuen	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	
10	Caban	Ik	Manik	Eb	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	
11	Ezenab	Akbal	Lamat	Ben	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	
12	Cauac	Kan	Muluc	Ix	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	
13	Ahau	Chicchan	Oc	Men	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	
14	Imix	Cimi	Chuen	Cib	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	
15	Ik	Manik	Eb	Caban	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	
16	Akbal	Lamat	Ben	Ezenab	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	
17	Kan	Muluc	Ix	Cauac	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	
18	Chicchan	Oc	Men	Ahau	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	
19	Cimi	Chuen	Cib	Imix	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	
20	Manik	Eb	Caban	Ik	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	

THE ANNUAL CALENDAR

	YEARS				Pop	Uo	Zip	Zotz	Tzec	Xul	Yaxkin	Mol	Chen	Yax	Zac	Ceh	Mac	Kankin	Muan	Pax	Kayab	Cumhu	Uayeb
	3	**16**	**29**	**42**																			
	Days	Days	Days	Days																			
1	Lamat	Ben	Ezenab	Akbal	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12
2	Muluc	Ix	Cauac	Kan	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13
3	Oc	Men	Ahau	Chicchan	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**
4	Chuen	Cib	Imix	Cimi	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2
5	Eb	Caban	Ik	Manik	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3
6	Ben	Ezenab	Akbal	Lamat	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	
7	Ix	Cauac	Kan	Muluc	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	
8	Men	Ahau	Chicchan	Oc	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	
9	Cib	Imix	Cimi	Chuen	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	
10	Caban	Ik	Manik	Eb	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	
11	Ezenab	Akbal	Lamat	Ben	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	
12	Cauac	Kan	Muluc	Ix	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	
13	Ahau	Chicchan	Oc	Men	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	
14	Imix	Cimi	Chuen	Cib	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	
15	Ik	Manik	Eb	Caban	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	
16	Akbal	Lamat	Ben	Ezenab	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	
17	Kan	Muluc	Ix	Cauac	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	
18	Chicchan	Oc	Men	Ahau	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	
19	Cimi	Chuen	Cib	Imix	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	
20	Manik	Eb	Caban	Ik	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	

THE ANNUAL CALENDAR

	YEARS				Pop	Uo	Zip	Zotz	Tzec	Xul	Yaxkin	Mol	Chen	Yax	Zac	Ceh	Mac	Kankin	Muan	Pax	Kayab	Cumhu	Uayeb
	4	**17**	**30**	**43**																			
	Days	Days	Days	Days																			
1	Lamat	Ben	Ezenab	Akbal	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13
2	Muluc	Ix	Cauac	Kan	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1
3	Oc	Men	Ahau	Chicchan	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**
4	Chuen	Cib	Imix	Cimi	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3
5	Eb	Caban	Ik	Manik	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4
6	Ben	Ezenab	Akbal	Lamat	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	
7	Ix	Cauac	Kan	Muluc	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	
8	Men	Ahau	Chicchan	Oc	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	
9	Cib	Imix	Cimi	Chuen	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	
10	Caban	Ik	Manik	Eb	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	
11	Ezenab	Akbal	Lamat	Ben	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	
12	Cauac	Kan	Muluc	Ix	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	
13	Ahau	Chicchan	Oc	Men	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	
14	Imix	Cimi	Chuen	Cib	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	
15	Ik	Manik	Eb	Caban	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	
16	Akbal	Lamat	Ben	Ezenab	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	
17	Kan	Muluc	Ix	Cauac	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	
18	Chicchan	Oc	Men	Ahau	**8**	**2**	**9**	**3**	**10**	**4**	**11**	5	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	
19	Cimi	Chuen	Cib	Imix	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	
20	Manik	Eb	Caban	Ik	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	

THE ANNUAL CALENDAR

	YEARS				Pop	Uo	Zip	Zotz	Tzec	Xul	Yaxkin	Mol	Chen	Yax	Zac	Ceh	Mac	Kankin	Muan	Pax	Kayab	Cumhu	Uayeb
	5	**18**	31	**44**																			
	Days	Days	Days	Days																			
1	Lamat	Ben	Ezenab	Akbal	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1
2	Muluc	Ix	Cauac	Kan	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2
3	Oc	Men	Ahau	Chicchan	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**
4	Chuen	Cib	Imix	Cimi	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4
5	Eb	Caban	Ik	Manik	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5
6	Ben	Ezenab	Akbal	Lamat	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	
7	Ix	Cauac	Kan	Muluc	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	
8	Men	Ahau	Chicchan	Oc	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	
9	Cib	Imix	Cimi	Chuen	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	
10	Caban	Ik	Manik	Eb	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	
11	Ezenab	Akbal	Lamat	Ben	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	
12	Cauac	Kan	Muluc	Ix	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	
13	Ahau	Chicchan	Oc	Men	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	
14	Imix	Cimi	Chuen	Cib	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	
15	Ik	Manik	Eb	Caban	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	
16	Akbal	Lamat	Ben	Ezenab	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	
17	Kan	Muluc	Ix	Cauac	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	
18	Chicchan	Oc	Men	Ahau	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	
19	Cimi	Chuen	Cib	Imix	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	
20	Manik	Eb	Caban	Ik	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	

THE ANNUAL CALENDAR

	YEARS				Pop	Uo	Zip	Zotz	Tzec	Xul	Yaxkin	Mol	Chen	Yax	Zac	Ceh	Mac	Kankin	Muan	Pax	Kayab	Cumhu	Uayeb
	6	19	32	45																			
	Days	Days	Days	Days																			
1	Lamat	Ben	Ezenab	Akbal	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2
2	Muluc	Ix	Cauac	Kan	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3
3	Oc	Men	Ahau	Chicchan	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**
4	Chuen	Cib	Imix	Cimi	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5
5	Eb	Caban	Ik	Manik	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6
6	Ben	Ezenab	Akbal	Lamat	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	
7	Ix	Cauac	Kan	Muluc	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	
8	Men	Ahau	Chicchan	Oc	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	
9	Cib	Imix	Cimi	Chuen	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	
10	Caban	Ik	Manik	Eb	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	
11	Ezenab	Akbal	Lamat	Ben	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	
12	Cauac	Kan	Muluc	Ix	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	
13	Ahau	Chicchan	Oc	Men	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	
14	Imix	Cimi	Chuen	Cib	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	
15	Ik	Manik	Eb	Caban	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	
16	Akbal	Lamat	Ben	Ezenab	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	
17	Kan	Muluc	Ix	Cauac	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	
18	Chicchan	Oc	Men	Ahau	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	
19	Cimi	Chuen	Cib	Imix	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	
20	Manik	Eb	Caban	Ik	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	

THE ANNUAL CALENDAR

	YEARS				Pop	Uo	Zip	Zotz	Tzec	Xul	Yaxkin	Mol	Chen	Yax	Zac	Ceh	Mac	Kankin	Muan	Pax	Kayab	Cumhu	Uayeb
	7	**20**	**33**	**46**																			
	Days	Days	Days	Days																			
1	Lamat	Ben	Ezenab	Akbal	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3
2	Muluc	Ix	Cauac	Kan	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4
3	Oc	Men	Ahau	Chicchan	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**
4	Chuen	Cib	Imix	Cimi	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6
5	Eb	Caban	Ik	Manik	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7
6	Ben	Ezenab	Akbal	Lamat	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	
7	Ix	Cauac	Kan	Muluc	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	
8	Men	Ahau	Chicchan	Oc	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	
9	Cib	Imix	Cimi	Chuen	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	
10	Caban	Ik	Manik	Eb	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	
11	Ezenab	Akbal	Lamat	Ben	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	
12	Cauac	Kan	Muluc	Ix	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	
13	Ahau	Chicchan	Oc	Men	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	
14	Imix	Cimi	Chuen	Cib	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	
15	Ik	Manik	Eb	Caban	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	
16	Akbal	Lamat	Ben	Ezenab	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	
17	Kan	Muluc	Ix	Cauac	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	
18	Chicchan	Oc	Men	Ahau	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	
19	Cimi	Chuen	Cib	Imix	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	
20	Manik	Eb	Caban	Ik	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	

THE ANNUAL CALENDAR

	YEARS				Pop	Uo	Zip	Zotz	Tzec	Xul	Yaxkin	Mol	Chen	Yax	Zac	Ceh	Mac	Kankin	Muan	Pax	Kayab	Cumhu	Uayeb
	8	21	34	47																			
	Days	Days	Days	Days																			
1	Lamat	Ben	Ezenab	Akbal	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4
2	Muluc	Ix	Cauac	Kan	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5
3	Oc	Men	Ahau	Chicchan	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**
4	Chuen	Cib	Imix	Cimi	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7
5	Eb	Caban	Ik	Manik	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8
6	Ben	Ezenab	Akbal	Lamat	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	
7	Ix	Cauac	Kan	Muluc	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	
8	Men	Ahau	Chicchan	Oc	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	
9	Cib	Imix	Cimi	Chuen	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	
10	Caban	Ik	Manik	Eb	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	
11	Ezenab	Akbal	Lamat	Ben	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	
12	Cauac	Kan	Muluc	Ix	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	
13	Ahau	Chicchan	Oc	Men	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	
14	Imix	Cimi	Chuen	Cib	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	
15	Ik	Manik	Eb	Caban	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	
16	Akbal	Lamat	Ben	Ezenab	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	
17	Kan	Muluc	Ix	Cauac	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	
18	Chicchan	Oc	Men	Ahau	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	
19	Cimi	Chuen	Cib	Imix	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	
20	Manik	Eb	Caban	Ik	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	

THE ANNUAL CALENDAR

	YEARS				Pop	Uo	Zip	Zotz	Tzec	Xul	Yaxkin	Mol	Chen	Yax	Zac	Ceh	Mac	Kankin	Muan	Pax	Kayab	Cumhu	Uayeb
	9	**22**	**35**	**48**																			
	Days	Days	Days	Days																			
1	Lamat	Ben	Ezenab	Akbal	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5
2	Muluc	Ix	Cauac	Kan	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6
3	Oc	Men	Ahau	Chicchan	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**
4	Chuen	Cib	Imix	Cimi	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8
5	Eb	Caban	Ik	Manik	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9
6	Ben	Ezenab	Akbal	Lamat	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	
7	Ix	Cauac	Kan	Muluc	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	
8	Men	Ahau	Chicchan	Oc	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	
9	Cib	Imix	Cimi	Chuen	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	
10	Caban	Ik	Manik	Eb	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	
11	Ezenab	Akbal	Lamat	Ben	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	
12	Cauac	Kan	Muluc	Ix	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	
13	Ahau	Chicchan	Oc	Men	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	
14	Imix	Cimi	Chuen	Cib	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	
15	Ik	Manik	Eb	Caban	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	
16	Akbal	Lamat	Ben	Ezenab	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	
17	Kan	Muluc	Ix	Cauac	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	
18	Chicchan	Oc	Men	Ahau	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	
19	Cimi	Chuen	Cib	Imix	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	
20	Manik	Eb	Caban	Ik	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	

THE ANNUAL CALENDAR

	YEARS				Pop	Uo	Zip	Zotz	Tzec	Xul	Yaxkin	Mol	Chen	Yax	Zac	Ceh	Mac	Kankin	Muan	Pax	Kayab	Cumhu	Uayeb
	10	23	36	49																			
	Days	Days	Days	Days																			
1	Lamat	Ben	Ezenab	Akbal	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6
2	Muluc	Ix	Cauac	Kan	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7
3	Oc	Men	Ahau	Chicchan	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**
4	Chuen	Cib	Imix	Cimi	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9
5	Eb	Caban	Ik	Manik	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10
6	Ben	Ezenab	Akbal	Lamat	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	
7	Ix	Cauac	Kan	Muluc	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	
8	Men	Ahau	Chicchan	Oc	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	
9	Cib	Imix	Cimi	Chuen	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	
10	Caban	Ik	Manik	Eb	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	
11	Ezenab	Akbal	Lamat	Ben	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	
12	Cauac	Kan	Muluc	Ix	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	
13	Ahau	Chicchan	Oc	Men	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	
14	Imix	Cimi	Chuen	Cib	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	
15	Ik	Manik	Eb	Caban	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	
16	Akbal	Lamat	Ben	Ezenab	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	
17	Kan	Muluc	Ix	Cauac	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	
18	Chicchan	Oc	Men	Ahau	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	
19	Cimi	Chuen	Cib	Imix	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	
20	Manik	Eb	Caban	Ik	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	

THE ANNUAL CALENDAR

	YEARS				Pop	Uo	Zip	Zotz	Tzec	Xul	Yaxkin	Mol	Chen	Yax	Zac	Ceh	Mac	Kankin	Muan	Pax	Kayab	Cumhu	Uayeb
	11	**24**	**37**	**50**																			
	Days	Days	Days	Days																			
1	Lamat	Ben	Ezenab	Akbal	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7
2	Muluc	Ix	Cauac	Kan	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8
3	Oc	Men	Ahau	Chicchan	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**
4	Chuen	Cib	Imix	Cimi	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10
5	Eb	Caban	Ik	Manik	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11
6	Ben	Ezenab	Akbal	Lamat	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	
7	Ix	Cauac	Kan	Muluc	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	
8	Men	Ahau	Chicchan	Oc	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	
9	Cib	Imix	Cimi	Chuen	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	
10	Caban	Ik	Manik	Eb	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	
11	Ezenab	Akbal	Lamat	Ben	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	
12	Cauac	Kan	Muluc	Ix	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	
13	Ahau	Chicchan	Oc	Men	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	
14	Imix	Cimi	Chuen	Cib	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	
15	Ik	Manik	Eb	Caban	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	
16	Akbal	Lamat	Ben	Ezenab	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	
17	Kan	Muluc	Ix	Cauac	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	
18	Chicchan	Oc	Men	Ahau	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	
19	Cimi	Chuen	Cib	Imix	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	
20	Manik	Eb	Caban	Ik	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	

THE ANNUAI CALENDAR

	YEARS				Pop	Uo	Zip	Zotz	Tzec	Xul	Yaxkin	Mol	Chen	Yax	Zac	Ceh	Mac	Kankin	Muan	Pax	Kayab	Cumhu	Uayeb
	12	**25**	**38**	**51**																			
	Days	Days	Days	Days																			
1	Lamat	Ben	Ezenab	Akbal	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8
2	Muluc	Ix	Cauac	Kan	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9
3	Oc	Men	Ahau	Chicchan	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**
4	Chuen	Cib	Imix	Cimi	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11
5	Eb	Caban	Ik	Manik	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12
6	Ben	Ezenab	Akbal	Lamat	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	
7	Ix	Cauac	Kan	Muluc	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	
8	Men	Ahau	Chicchan	Oc	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	
9	Cib	Imix	Cimi	Chuen	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	
10	Caban	Ik	Manik	Eb	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	
11	Ezenab	Akbal	Lamat	Ben	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	
12	Cauac	Kan	Muluc	Ix	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	
13	Ahau	Chicchan	Oc	Men	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	
14	Imix	Cimi	Chuen	Cib	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	
15	Ik	Manik	Eb	Caban	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	
16	Akbal	Lamat	Ben	Ezenab	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	
17	Kan	Muluc	Ix	Cauac	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	
18	Chicchan	Oc	Men	Ahau	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	
19	Cimi	Chuen	Cib	Imix	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	
20	Manik	Eb	Caban	Ik	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	

THE ANNUAL CALENDAR

	YEARS				Pop	Uo	Zip	Zotz	Tzec	Xul	Yaxkin	Mol	Chen	Yax	Zac	Ceh	Mac	Kankin	Muan	Pax	Kayab	Cumhu	Uayeb
	13	26	39	52																			
	Days	Days	Days	Days																			
1	Lamat	Ben	Ezenab	Akbal	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9
2	Muluc	Ix	Cauac	Kan	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10
3	Oc	Men	Ahau	Chicchan	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**
4	Chuen	Cib	Imix	Cimi	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12
5	Eb	Caban	Ik	Manik	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13
6	Ben	Ezenab	Akbal	Lamat	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	
7	Ix	Cauac	Kan	Muluc	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	
8	Men	Ahau	Chicchan	Oc	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	
9	Cib	Imix	Cimi	Chuen	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	
10	Caban	Ik	Manik	Eb	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	
11	Ezenab	Akbal	Lamat	Ben	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	
12	Cauac	Kan	Muluc	Ix	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	
13	Ahau	Chicchan	Oc	Men	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	
14	Imix	Cimi	Chuen	Cib	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	
15	Ik	Manik	Eb	Caban	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	
16	Akbal	Lamat	Ben	Ezenab	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	
17	Kan	Muluc	Ix	Cauac	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	
18	Chicchan	Oc	Men	Ahau	**4**	**11**	**5**	**12**	**6**	**13**	**7**	**1**	**8**	**2**	**9**	**3**	**10**	**4**	**11**	**5**	**12**	**6**	
19	Cimi	Chuen	Cib	Imix	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	
20	Manik	Eb	Caban	Ik	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	